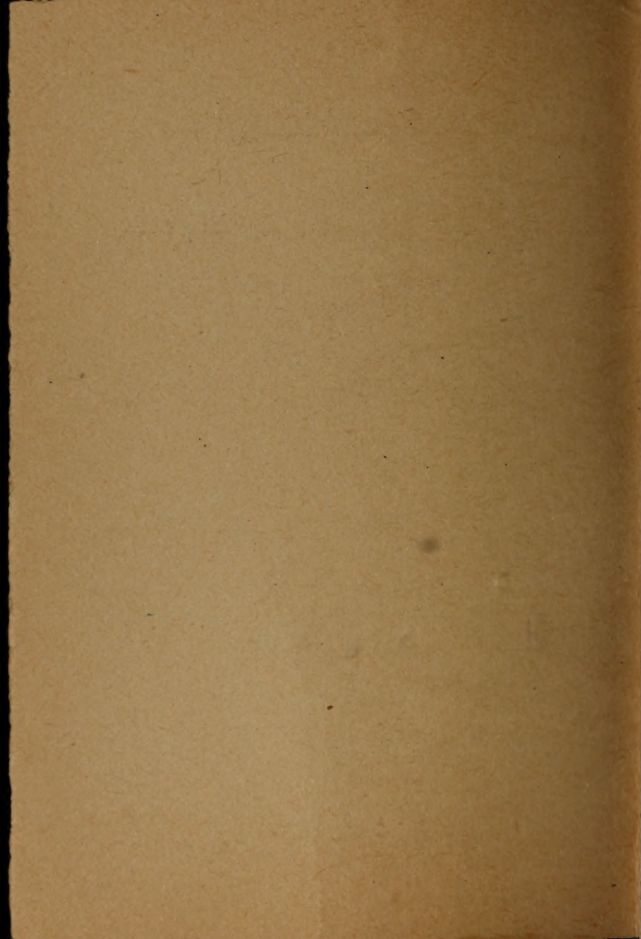


LITTLE BLUE BOOK NO. 509  
Edited by E. Haldeman-Julius

# Are We Machines?

Is Life Mechanical or Is It  
"Something Else"?

A Debate Between  
Clarence Darrow and Will Durant



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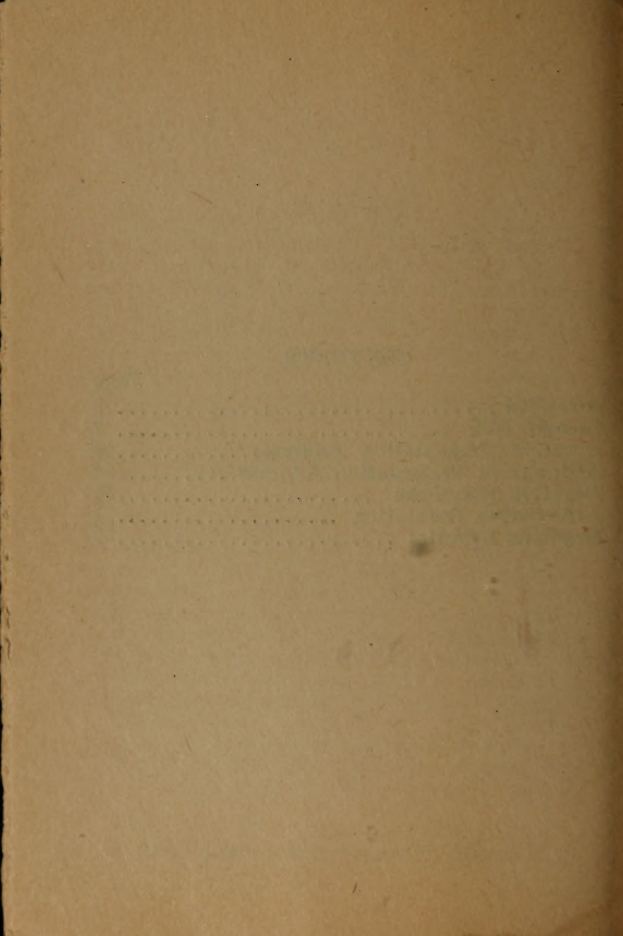
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## CONTENTS

	Page
Foreword .....	5
Introduction .....	7
Negative Presentation Address.....	10
Affirmative Presentation Address.....	32
Negative Refutation .....	45
Affirmative Refutation .....	52
Negative Rebuttal .....	59

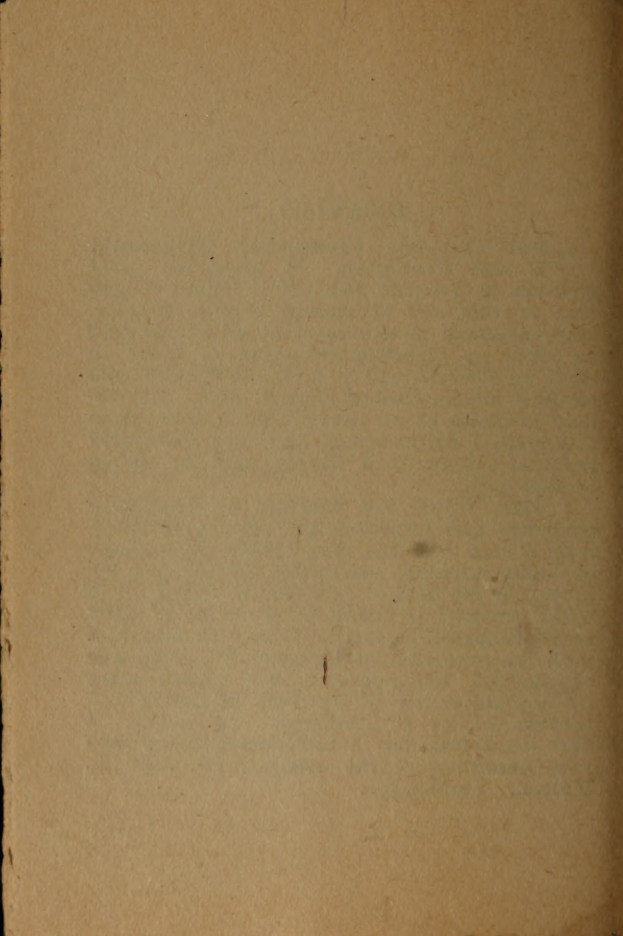




## FOREWORD

Alfred A. Asgis (Temporary Chairman):  
Ladies and Gentlemen. It gives me great pleasure to welcome you. It is indeed unique that in this age of money, movies, murder, and—mellowed moistures—that we should find so large an audience gathering to listen to what we are sure will be a philosophical debate on that much-talked-of subject, Man. As further evidence of an overwhelming interest in this topic, I am informed there are about 2000 persons outside who cannot gain admission to this hall.

I shall fulfill my function as temporary chairman and introduce the permanent chairman, a man who has won, by his experiments at Johns Hopkins, recognition for his new approach in the field of psychology, a man whom many consider as America's foremost scientist in psychological research. It may be said that, with the exception of Sigmund Freud in psychoanalysis, his approach has caused more intense discussion in the field of psychology, because of its revolutionary conclusions. I take great pleasure in introducing the permanent chairman of the evening, Dr. John B. Watson. (Applause).





# ARE WE MACHINES?

## INTRODUCTION

John B. Watson (Chairman): Ladies and Gentlemen. It is a little hard for me to see why a mere mortal should be put in as chairman, considering the interest in this subject and the brilliant men who are to speak to you this evening. I suppose I was chosen because I am a behaviorist (and, therefore, an objectionist), so that I would be an impartial chairman. Those of you who understand behaviorism will know how impartial a chairman I shall be. (Laughter.)

May I say, in passing, that I think this debate will unquestionably go down in history as one of the great debates of all time. The subject, "Is Man a Machine?" is more than a mere topic for discussion. It is a matter of vital interest to all of us; it is a matter which concerns our daily conduct.

You know, the behaviorist has a theory that language is merely a substitute for objects and for actions. Consequently, words spoken by others, and words that we speak ourselves, are just as potent in guiding our conduct as stick

and stone. Hence, these verbal concepts that we will get this evening will unquestionably change us. They are going to give us stimuli inside our environment, even though it be an internal environment in terms of words that you speak to yourself, which will unquestionably affect your actions.

After all, these verbal formulations, "Is Man a Machine?" ; "Man is a mere machine"; "Man is more than clay"; "He has a spark of the divine within him"—all of these verbal formulations, and many like them, are, unfortunately, gotten in childhood and never further scrutinized. So that the debate has practical significance in our daily life.

Again, this debate has a marvelous setting in the history of philosophy and in the history of psychology. Psychology has taken a rather peculiar position with respect to this question. It has been too bitter a controversy for psychologists to take the affirmative out and out, and when I speak of psychology now I mean since the early history of modern psychology beginning with Wundt and others. So you will find Wundt really straddling the question in his laboratory with a so-called psycho-physical parallelism. We have the machine, the body, and the central nervous system, and we have

also something that we wouldn't call mind or spirit, but something that he called consciousness. Now, these two things are unrelated, but they parallel one another so that when the body moves you have some kind of movement in consciousness.

Now, tonight one affects the other. You can see what an unsatisfactory hypothesis that is. You can see that it is a hypothesis which came from the history of philosophy which, after all, is a history of religion, and it was to satisfy those religious principles within some of us which made us adopt the idea of consciousness in place of the soul and to adopt psychophysical parallelism in place of mechanism.

I do feel that the speakers tonight should take this question rather logically, should give us some hard facts, should give us some kind of definitions. I have been struggling for a long time so far as I am concerned to find out what a man is, and yet, we glibly say, "Is Man a Machine?" I am sure our speakers will tell us a little bit about man. Is he just a group of ordinary chemicals put together in some kind of a happy but fortuitous way—put or got together in such a way that he could grow and reproduce his kind, could eat food and eliminate waste product? Or is man

something more than this happy conglomeration of chemicals worth, I believe, 98 cents, and if so, just what is it that comes in somewhere in this evolutionary scale? Is it some kind of spirit from the outside? Does somebody come in and breathe something upon this clay in order to make a man of it? Then again, the question of the machine is a very vital one. Ordinarily we define a machine as something that man made and that definition usually is thought to settle the question. Therefore, man is not a machine. I am sure you are too logically sophisticated ever to accept any such definition as that, but the speaker who affirms that we are machines will have to tell us just how complicated a machine can be.

Can we think logically of a machine which can observe that it has moved one of its members up or down or to the right or the left, a machine which can speak, a machine which can react the same to different stimuli at times, a machine which can act differently to the same stimuli at times? In other words, how complicated a machine can we conceive of as being in existence? The most complicated machine we know of today probably is the linotype machine or some of the radio

devices, but they are far, far off, of course, from reaching that complication that we find even in an amoeba.

Now, the question comes up, it seems to me, what are the logical implications of these two positions? If man is a machine, can we punish him? Can he be naughty? Can he be nice? Have we any right to force him into any kind of conduct either good or bad? If so, what justification have we then for any kind of a punishment theory whatsoever?

Well, I must leave the question at this point. I am sure I leave it in better hands. We must be on the lookout, though, for this. We must judge on the basis of logic. Both these gentlemen are eloquent. Both of these gentlemen know how to arouse the last spark of emotion within us, and when they arouse those emotions within us we lose our ability to judge. We want to keep our common sense because we feel that we are able to judge facts and, at any rate, to scrutinize their logical positions. It is my great pleasure to introduce the speaker who takes the negative on this side first, a gentleman who needs no introduction to this audience, who has written one of the most popular books, is one of America's most popular lecturers, Dr. Will Durant. (Applause.)

## NEGATIVE PRESENTATION ADDRESS

*Dr. Will Durant*

Dr. Will Durant: Mr. Chairman, Mr. Darrow, Ladies and Gentlemen, I am glad that we are met in this historic hall, dedicated by Tschaikowsky a generation ago, and ennobled since by a hundred geniuses—I am glad that we are met here to consider the most far-reaching question in philosophy. That you are here is a sign that philosophy has undergone a resurrection, that it has escaped from the dead hand of scholasticism, and has made its re-entry into the living world.

Our question, like most debatable questions, is ambiguous. I take it for granted first that our question does not concern materialism, that we are discussing this evening not the constituents of the universe, but the methods and processes of the world. Further, I shall interpret the term machine, or (as the theory of living machines is called in philosophy) the theory of mechanism, as meaning that man and all living things are mechanical in the sense that their behavior can be entirely explained in mechanical terms, on the principles



that seem to hold good in industry, in physics, and in chemistry. That is the sense in which the word "mechanism" is used in philosophy, and it is to that aspect of the question that I shall confine myself in this first period.

But it is possible that our beloved machine here may choose to adopt the other slant of this question, the theory of determinism, that man in all his actions and all his thoughts is irrevocably determined and compelled by conditions over which he has no control, and to which he contributes nothing. If Mr. Darrow chooses to exhume that almost extinct debate from the cemetery of dead problems, I shall be glad in the second round to follow him there and explain to him why I believe not only that he is something far subtler and livelier than a machine, but there is in him a spark of spontaneity and initiative which has contributed a considerable share to his adventurous and generous life.

It was the Industrial Revolution that filled the world with the strange notion that man is a machine. For first of all it accustomed the mind to dealing with machines and induced it more and more to think of causes not as biological, but as mechanical. The worker within factory wall, seeing the busy activity slip about

him on pulleys and revolve on wheels, forgot that older existence in which life had seemed to be a matter of seeds spontaneously sprouting from the soil, responding eagerly to every encouragement, and multiplying with an astounding and bountiful fertility. The world, which had once been a picture of growing plants and wilful children, of loving mothers and ambitious men, became for the modern mind a vast array of mechanisms, from the planets that circled mechanically around the sun to the crowds that flocked mechanically to be in at the death of a moving-picture star. Science was sure now that it had at last been admitted behind the curtains of the cosmic drama. It marveled at the unsuspected machinery which had shifted a thousand scenes and created a million delusions. It concluded in modest admiration that the property man was the real dramatist and that the wires were the play.

But again, the Industrial Revolution made cities, and cities made crowds, and crowds unmade men. Once again in the modern metropolis those conditions appeared which in the ancient Orient had shorn the individual of personality, reduced him to insignificance, and led him to a similar philosophy of fatalism

and despair. In this teeming welter of city population one became a number or a hand; the mind became an instrument for measuring, for weighing, for counting. A man became part of the machines he fed with fuel. Democracy, which had proposed to liberate the individual, became itself a mechanism, an enslaving chain of machines leading mindless masses to the ballot box. It was as useless for the individual to rebel against this system of wires and pulls and pushes as it had been for the individual to assert himself against the crushing conformities and crowds of the distant East. Even the leaders became a half-inanimate portion of the new contraption, almost as will-less and blind as the deluded people whose noses were quadrennially counted (or not counted) at the polls.

This abdication of personality is partly the cause of the secret sadness that lurks beneath the glitter and wit of the modern mind. To any one who had read his essay called "What is Man?" the pessimism of Mark Twain can no longer be mysterious or strange. For that unhappy humorist considered that all his joyous quips were the chemical result of the constitution of the primeval nebula (for what sins has it not been blamed?); and he believed

that the exuberant vitality of Tom Sawyer was simply the effervescence of a carbon compound. A little philosophy is a dangerous thing, and inclineth a man's mind to pessimism. It is said that the hilarious machine that created Huckleberry Finn had some trouble with his wife. But what woman could peaceably share her bed and board with an ebullient mechanism that looked upon her as a set of wheels wound up in the infancy of time and now unwinding itself, with superfluous sound and fury, to eternal impotence—and silence?

Doubtless the loss of our childhood faith has saddened us; and the double bereavement of every mature mind, that must lose the theological ideals of its infancy and then the political ideals of its youth, leaves the heart a little heavier with the weary weight of this unintelligible world. But part of the somber undertone beneath our superficial gayety is the result of the childish and culpable precipitancy of our own thought. It was not demanded of us that we should fly from a theology that scorned the natural basis of mind to a philosophy that ignored the mental developments of nature. It was not demanded of us that having abandoned our puerile pretense

at being the center and summit of the universe we should then prostrate ourselves before the machines in our factories and accept them as the Platonic ideas upon whose august models fortuitous variation had fashioned our souls. It was not required of us that we should abandon our share in the vitality of the world, in the undiscourageable expansiveness of life, in the persistent constructiveness of thought. But defeated on one part of the battle front, we retreated from the field in abject surrender and despair.

Was it necessary to yield so utterly? Is human behavior of the same order as the erosion of the hills, or the flight of the winds, or the obstinate tides of the sea? Is the inexhaustible solicitude of motherhood, the eager ambition of youth, the quiet tenderness of love merely a mechanical redistribution of physical force? Are the power and exuberance of life an appearance only? Is the passionate striving for beauty and perfection only a blind and fatal compulsion? Is the efficacy of consciousness only a delusion? Is the reality of will only a dream? Is man only a machine?

That is our question. It may comfort you to know that at the very moment when the theory of mechanism has reached down into

popular favor, it is being abandoned in a great many of the sciences, in biology (not in psychology), in physiology, even in physics itself. Lucien Poincare, one of the leading scientists of France, writes revealingly: "Today," he says, "the idea that all phenomena are capable of mechanical explanation is generally abandoned." The German scientist Cassiver says: "In modern physics the mechanical view of the world has been more and more superseded by the dynamic view." Le Bon, one of the founders of the atomic physics writes, "In spite of the efforts of thousands of workers, physiology has been able to tell us nothing of the nature of the forces that produce the phenomena of life. They have no analogy with those that are studied in physics."

Among the biologists the rejection of mechanism has become a common thing. Pavlow, the great Russian originator of the studies of conditioned reflexes, Driesch, the German embryologist, Haldane, professor of physiological chemistry in the University of Oxford—these are names that might make any mechanist pause. "The mechanistic theory," says Haldane, "has broken down. It no longer helps us in our physiological research. I should as soon think of going back to the mechani-



cal theory as I would of returning to the mythology of my Anglo-Saxon forefathers."

It is significant that Schopenhauer and Nietzsche, with all their hostility to traditional theology, rejected mechanism scornfully. Nietzsche asks the mechanist, "Is that world-interpretation alone right by which *you* maintain your position, by which investigation and work can go on scientifically in *your* sense? Do you really mean mechanical? Such an idea is a piece of grossness, provided it is not lunacy and idiocy. I say this in confidence to my friends the mechanists, who today like to hobnob with philosophers, and believe that mechanics is the teaching of the first and last laws upon which all existence must be built."

You perceive that it is possible for a man to be one of the most heretical rebels that the world has ever known, and yet to see that this ridiculous conception of vital behavior is a process of the same kind as those which we call mechanical, is a conception that comes to one only in an effort to leap back as far as possible from the theological hobgoblins of our youth. It is a defense-reaction, and once we have ceased to fear the recrudescence of theology in our own souls we shall be freer and

clearer in recognizing the shortcomings of this mechanical theory.

Yet, don't imagine for a moment that I wish to rest my case on authorities. Let us do our own thinking and face the phenomena directly for ourselves. Let us observe the unmechanical spontaneity, and purposiveness and selectiveness of life in locomotion, in digestion, in growth, in regeneration, in reproduction, in consciousness, and in genius.

Consider locomotion. Take some mechanism, say a toy automobile which will run resolutely enough when its spring has been wound and released by a human hand. Set it upon a smooth floor directly facing a slightly distant wall. Wind the spring, and release it. The car plunges forward against the wall. If the conditions are perfect it will rebound in the same line by which it advanced. It will stop for a moment and it will advance again and rebound in that same straight line, and continue forward and back in the same straight line until its artificial energy is completely spent.

By contrast let us perform in imagination an experiment that has been repeated time and again in biological laboratories. Take a glass bowl and fill it with water. Across the center

put a perfectly transparent glass partition just short enough to leave a narrow slit at either side. Into one half drop food. Into the other half drop some lowly organism, as simple as possible. Observe it under the microscope. It moves directly forward toward the food. It does not see the glass. It strikes the glass and rebounds in a straight line: apparently it is a machine. But suddenly it veers about, to the left or the right, and moves forward now at an angle, strikes the glass, rebounds. It veers again in the same direction. If it veered left the first time, it veers left again. It moves forward, strikes the glass, rebounds, again goes forward, goes through the partition, and finds the food. I ask you, can you conceive of a mechanical contraption of any kind that could possibly rival that judicious veering about, this appearance of self-directive purpose in the lowliest organism known to man?

Consider digestion. Some sensitive plants, like the *Dionaea* and the *Drosera*, close upon and absorb particles of food placed on the tissues. But when inedible substances are placed on those same leaves in the same way, even with the same form, the leaves do not respond. The amoeba normally rejects any-

thing that cannot serve for its nourishment. The cells of the human intestine show the same selectivity in their action. Each group of cells acts upon just one class of food and no other. Every cell in the human body chooses out of the blood stream the different and specific materials which it needs, and pours back into the blood the products of its own metabolic waste. Even at this lowly level you discover that remarkable ability to select which distinguishes the vital from the mechanical and which becomes ever more conscious and intelligent at each advance in evolution.

Consider growth. How could a machine grow? Why should it wish to grow? Was there ever a mechanism so marvelous that it might offer an analogy to the astounding self-development of life? Consider the lilies of the field: what enchanting power is it that frees them from their prison in the soil and lifts them, slowly, longingly toward the sun? Behold the swallows of the air: there are no cogs in them, no pulleys, and no wheels, and yet, we might say with Shelley:

If we could scorn hate, and pride and fear,  
If we were things born not to shed a tear,  
I know not why thy joy we ever should come near.

Here is a child. Why does it hunger and thirst for nourishment? Why does it reach

out with its soft hands to possess the world? See it grow. Out of simple food it makes dimples and curls and laughing eyes. See it for the first time fearfully and bravely trying to rise to a vertical dignity. Why should it long to stand and walk? Why should it tremble with perpetual curiosity, with fearless and insatiable ambition, watching and listening, touching and tasting, manipulating, and experimenting, observing and pondering, thinking, growing—until it weighs the earth and charts and measures the stars! What is this magic transfiguration of puberty that takes the boy and quiets and deepens him into a man?—that takes the girl and fashions her into a gentle beauty fairer than any art? Is it mechanical?

Consider regeneration. Cut off one ray of starfish and the center will regrow it. Cut off all of them, and the center will regrow them all. Cut out the center and the rays will regrow it. A machine out of order cannot repair its parts; it waits stupidly and senselessly for some living hand to come and restore it to order and efficacy. But these larger phenomena have been adequately described by Bergson: we set them aside. The simplest healing of the slightest wound is unmechanical and

marvelous enough for me. With what artistry the new cells fling themselves over the gap in the wound as if some cellular intelligence were guiding the beneficent work! We offer mechanical or chemical aids to these vital processes, but we know that they have the same relation to nature's healing power that marble or clay has to the sculptor's hand. We know that in some way which mechanism will never illuminate the energy and impetus of life will bear us on and through a thousand battles and through a thousand injuries until that divine vitality is spent and finds for itself another and a younger form.

Therefore consider reproduction. Here is a little ovum, invisible to the eye. Here is a restless sperm, moving about in worlds unrealized. Each of these microscopic cells is rich with the heredity of a thousand generations; each carries within it unique and subtle qualities of body and mind, impulses and dispositions and aptitudes, hunger and eagerness and love, perhaps in their plasm already lie the passion and patience of genius. Well, let that ovum and that sperm unite. Suddenly these possibilities become realities. The miracle of a new life begins. The fertilized cell, spurred on by some internal urgency, divides into two,



into four, into eight, into a hundred million cells that grow in unity even as their number mounts. A heart forms and begins to beat; a brain forms and begins to think; tiny hands and feet bud forth and stir in the womb. And then the little marvel matures and enters the world. Air and sound and cold and light impinge upon it. Its ears and eyes, and lips open; all its nerves tingle with sensation. Life has broken through death again, and pours itself lavishly into its new mould, joyous and young and strong once more.

Is it mechanical? Jacques Loeb thought he had proved that reproduction is mechanical by showing that he could take the unfertilized egg of a female sea urchin and cause it to develop to a certain point by stimulating it with the prick of a pin or shaking it in a salt solution. He concludes hilariously that reproduction was mechanical. No wonder Cicero said, "There is nothing so absurd but that it can be found in the book of some philosopher, or some scientist." (Laughter) Poor Jacques Loeb forgot that he had started with a living thing, the female's ovum. He forgot that she was not a machine, or at least, that he hadn't proved that she was. He forgot that he already had that divine urgency and vitality in the little egg.

If it developed of its own self, so much the more marvelous and unmechanical was it. The behavior of that unaided female in producing offspring without even the casual and undignified assistance to which Nature ungraciously limits the male was all the more astounding, and indicates, I suppose, that the emancipation of the female sex will in the coming century proceed to an unpleasant extreme.

Far more revealing than the experiments of Loeb were those of Hans Driesch. Driesch had been brought up in the laboratory of Ernst Haeckel at Jena. He had every inducement there to be a mechanist, but he discovered phenomena undreamed of in his master's philosophy. He took the fertilized ovum and cut it in half; the parts grew together and the ovum developed normally as if nothing had happened. Imagine what would have happened to a mechanical arrangement subjected to the same experiment—instead of the potency of life for growth and healing and self-repair and self-development!

But Driesch went further. He waited until that fertilized ovum had divided into two and then into four cells. He dragged apart the four cells, bloodily separated them, and then threw them together haphazard. They grew

into a normal being. He took another ovum and waited until the third division when it consisted of eight cells. He dragged them apart again and put them together with deliberate mal-adjustment; and they found a way to grow into a normal organism just the same.

Now, ladies and gentlemen, imagine a machine that cohabits with another machine to produce a third machine. Imagine that each machine is composed of millions of parts, each of which has the power of reproduction, and divides and multiplies and grows. Imagine that each machine separates one special part of itself to coalesce with a special part of another machine to form the model of a new machine. Imagine then that some gigantic Driesch comes along and cuts that model in half, and slaps the pieces together, and it develops unperturbed. Imagine that after it has gone on to some degree of development all the parts are taken asunder and then put together into deliberate chaos, and imagine that the machine goes on undisturbed in its operation as if nothing had happened—like a good Ford car! (Laughter) I ask you; was there ever a jollier hoax in science or philosophy? Was there ever in any religion, ancient, medieval or American,

any miracle that could compare with this majestic and monstrous myth?

We must omit the discussion of consciousness. Dr. Watson tells me that I have only five minutes. It is lucky for him. I was just about to show that consciousness is not mechanical and even that it exists. We will do that too perhaps, before the night is over.

Let us in conclusion consider genius. Here is the creative power of life in its clearest and highest form. Here is the last product of that glorious vitality which dances in the atom and fills the soil and the sea and the air with living and growing things. Here, in genius, mind turns around and remoulds the environment in which it grew. Man, the supposed machine, invents and operates machines, and craves beauty, and seeks truth, and creates social order, and rises to the loftiest reaches of morality and love. And I am asked to believe that the philosophic frenzy of Plato, the fine passion of Beethoven or Shakespeare, the divine intoxication of Spinoza, the godlike grandeur of Leonardo da Vinci's mind are mechanical processes, that the thoughts and the aspirations of these men were put into them with some mysterious time attachment by that mythical nebula a million millennia ago!

Well, I refuse to believe it. I cannot understand how any cautious and skeptical mind can so far forget itself as to accept so ridiculous a fairy story; and I wonder does Mr. Darrow realize how much credulity lies behind his unbelief, how much simple faith in untested and fallible authority? I do not believe that Chicago's leading citizen is a machine mechanically meditating upon its own machinery, an automaton automatically reflecting upon its own automatism. If I could believe that I could accept every fairy story ever told and every legend in every Bible ever written. After escaping from the infallibility of a church and from the infallibility of a book I refuse to surrender to the infallibility of a physicist who tries to squeeze into his test tubes and his narrow formulae all this budding and teeming world. It is time we should put an end to this new age of faith, and come to doubt even our scientists when they speak to us of miracles in terms of a childish mythology.

Biology is at a standstill today because it has been dealing with death rather than with life, with butterflies not on the wing, but on the pin, with preparations of dead tissues for microscopic slides, with specimens preserved

in alcohol. I look for the time biology will rebel against its domination by the narrow concepts of physics, when it will understand that the life which it is privileged to study and immediately feel comes far nearer to the basis of reality than the unseen molecules and atoms of natural science. And when biology is at last free from the dead hand of the mechanistic method it will come out of the laboratory into the world; it will transform human purposes and human conduct as physics has remade the face of the earth. And by holding life and growth as fundamental and sacred it will bring to an end the brutal tyranny of machinery over mankind. Slowly as we move out of the age of physics into the age of biology we shall come to see under these superficial mechanisms the throbbing and struggling life beneath. We shall come to understand that in some modest measure we may participate in what Whitman called "the procreant urge of the world," that we may write some lines at least in the drama of creation. Or as I phrased it fourteen years ago in a youthful escapade in poetry:



Through my window the voices of children playing,  
Voices that drown the wisdom of my books  
Stirring me strangely.

I sit compelled by the throbbing melody  
Of their songs and their laughter.

My still body moves to the rhythm of their play;

I know that the holiness of life is within them,

That their play is the groping of Deity

And the overture of persistent creation.

I utter no sound, but my throat aches with the  
longing.

O, God! to be with them, to laugh and to sing  
And to play!

Softly now through the din of the voices

I hear tramping quietly the strong music of the  
eternal.

I am filled with the mystical movement of life;

I am warm with the fever of currents that begin  
not and end not;

I am merged with the river of leaping reality;

I am one with the riotous surge of sea,

And the madness of thunder, and the glory that  
illuminates the sky.

Sweeps through me onward the resistless power of  
all things,

Burns in me the hot breath of the forward flux of  
the world;

Through me, if I will, creation;

In me—oh, in me!—God.

## AFFIRMATIVE PRESENTATION ADDRESS

*Clarence Darrow*

Chairman Watson: You have heard the negative, pleasing, convincing, logical, scholarly. Let us keep our minds open until the affirmative facts are in.

I have to be very careful in introducing the affirmative speaker. I think already Dr. Durant suspects a little collusion between the Chairman and the next speaker. May I say this about him, that he is the world's greatest student of law, and if I may say it in one way, that he is the world's most terrible speaker—terrible, that is, to the man who has to answer him. Mr. Clarence Darrow. (Applause).

Mr. Clarence Darrow: I am sorry the Chairman couldn't make this reply instead of me. He knows a good deal more about the subject than I do or than both of us do. (Laughter).

My friend over here has been talking for forty minutes telling us what life is not, but not uttering a single word as to what it is. He has in the last analysis quoted Walt Whitman as the champion scientist of the world. Now, I read Walt Whitman when I don't care to think but just want to feel, and when he says that "Holiness is life," it reminds me of Mary Baker Eddy when she said, "God is love and love is God." (Laughter). No use of having two words for the same thing. Is holiness

life? Bunk! It may sound good, but it has nothing whatever to do with this subject.

Also Whitman says, "I am a groping of Deity." Well, perhaps it would have been in order, if he believes it, to tell us what he means by Deity. If one seriously does not believe that man is a machine, then it is up to him as a matter of fairness to tell us what man is—if he can—which he can't. I will be honest with you in this matter. I cannot prove to you that man is a machine. I cannot demonstrate to you just what process makes life. I cannot demonstrate to you as a mathematician would demonstrate a problem just what process of mechanism brings consciousness, if there be such a thing, which is very doubtful.

What I do contend is this: That the manifestation of the human machine and of living organisms is very like unto what we know as a machine, and that if we could find it all out we would probably find that everything had a mechanistic origin.

If I were on the other side, I would not be satisfied to belittle biology and say that the persecutors of the Middle Ages were wiser than modern scientists. If I did, I'd join the most medieval church in the city and I'd say goodbye to science.

Science cannot solve every problem, but it at least tries, and I think it has come very close to the solution of this old, old problem of what is man.

Now, what is a machine, first? I will not especially quarrel with my friend's definition of

a machine, for I never deal in technicalities, and I have no short cut in this question. I am here to learn. I only wish I had a chance! (Laughter.) One definition of a machine which appeals to me as pretty good is this: "An apparatus so designed that it can change one kind of energy to another for a purpose." Coal may be taken out of a mine and fed into a machine and it may produce power in the shape of steam or electricity. It was all in the coal before, but it has been transferred to something else. Nothing is lost, no forces, no power of any sort is lost, no matter is lost. It is simply changed into something else.

Is man this sort of a machine? Let's examine it. I don't know so much about the nobility and grandeur of man as my friend seemed to think perhaps he knows. I do not think that I am degrading him when I place him in the category of machines. If anybody complains it ought to be the machine!

What do we know about the human machine? We know that it takes one form of energy and transposes it into another. We know that we give it food which in the human system is broken up and the energy that results is transferred into something else. Let us look at the process that the human machine goes through in this transformation of energy and see whether it resembles any other machine, and if it doesn't, then what? Is there some mysterious thing about man which for lack of some other word, or for lack of any word that any human being can understand, we call a soul?

Does he stand out here separated from nature, and stand alone? Let us see what man does.

We feed him, or he can't live and he can't work. We place food in his mouth. What happens to it? It is digested. The energy in the food is released and goes into the body just exactly the same as the energy placed in the coal box of an engine is released and makes steam. How does it go? It is first taken care of by certain juices and is digested. It passes into the intestine. Then what happens? This digested food is power, just like the coal; it is energy. If a man is to work, if the body is to live, this energy must become a part of him. It must go to his brain, if he has any, to his feet, to every part of him. How does it get there? Man has a circulatory system made of arteries and blood-vessels. The artery at the intestine is separated by only a very small lining from the intestine. The juices of the intestine pass into the blood, some of the blood to the intestines. As it goes by these juices are absorbed; this food is absorbed; this energy is absorbed; the power is absorbed—a simple, plain obviously mechanical process.

Then what happens? These arteries and blood vessels reach every part of the body. They carry to every part of the body the strength that it needs and the power that it needs.

But the system must have oxygen just exactly the same as an engine must have oxygen for combustion. One thing is turned into another. This food is turned into starch, sugar,

and one or two other things and consumed to produce this power. The blood is pumped by the heart. We call it pumped; that isn't exactly the process. I don't need to describe the process—in fact, I can't. But for all conveniences everybody calls the heart a pump. Anyhow, by its constant action it pushes the blood out and in. It is carried to the lungs. As it passes through the lungs just for a brief second it comes in contact with the air, which is necessary to complete the fuel. The power is carried to every part of the human body; perfectly mechanical, like an engine, like a machine that a man has built—the whole process the same.

Scientists have made investigations upon this subject and no scientist claims that he has found the ultimate facts. Perhaps he never will, but he has found enough to justify the conclusion that man more nearly resembles a machine than he resembles a ghost carrying around a body for a time, much more nearly than he resembles something that no scientist even dares to talk about, because when he talks about it he can no longer be a scientist.

Mr. Durant talks about this reaction against religion. What does he mean by religion? Does he mean that the Lord took a perfectly good rib out of a man to make a woman? Is that what he means by religion? Has he given us one single conception of what he thinks man is? Is it more reasonable to suppose that man has come as everything else has come, that he is built upon the same pattern that everything else is built upon, that he is a ma-



chine who must take in new fuel to be transferred into power, that sooner or later the works run down and he dies just like any other machine? Now, if he isn't that, what is he?

Let's see what happens to man. Well, you take a man who loses a large part of his blood. You can put salt water in the place of it and the pump goes along until he recovers and begins making blood again. His leg, his arm, his finger are levers operating just like any other levers, built upon the same plan, all of it mechanistic. There is not a single thing upon which you can lay your hand excepting this "spirit" which is the same as the "infinite." I guess it is. I don't know what either word means. They are words that scientists do not use, although they may think there may be something in them, but they are not scientific terms, at least.

Is there anything that a man presents in his conduct, in his actions, in the uses of his abilities, that isn't performed in exactly the same way as a machine? I think there is not.

Now, let's see how far my friend has to go to say that man is not a machine. Why not? Because I can't explain and because no man can explain every process? That hasn't much to do with it. It might be more satisfactory if you could. But men have been working upon that problem, and they have gotten much further along than they were a few years ago, and they are getting further along every day.

I don't say I am sure that there is nothing



in man but a mechanism in the same sense that I am sure that two and two make four. There are very few things in the world of which I am as sure as that, and I am not sure of that. It would depend upon what the two things and the other two things were, perhaps, before I'd be sure they would make four. Two philosophers and two religionists wouldn't make four anything. They'd make two philosophers and two religionists. That's all.

I am not sure of it to a mathematical demonstration. But I am fairly sure of enough things which to me warrant the inference that when the story is all told, if it ever is told, this will be the conclusion. And I am fairly sure that no fact has so far been discovered that proves anything else.

My friend talks about the absurdity of a machine writing poetry. Well now, I think that is just what machines do, as a rule. Nothing but a machine can turn out the metrical stuff that passes as poetry.

But I was talking about man. If man is a machine, or if he is a superhuman, whatever that is, if he is a part of the infinite, so is a fly. Can you explain a fly any better than a man? We can't explain him quite as well as we can man, because we don't understand his way of buzzing, that's all! (Laughter) But flies beget, which isn't the only sign of spirituality, whatever that may be.

I might call my friend's attention to the fact that life existed before it was produced as it is today, and it may exist after it is produced

in some other way. Begetting is only one method that nature has taken for passing to a certain stage. That is all. But it isn't universal, never was, and perhaps it never will be. I don't want to discourage my friend, but it probably never will be universal. That is only one method.

Now, the fly doesn't belong with the machine. The fly has free will. It knows what it wants when it flies into the butter. It has what my friend calls free will, just as much as he has, just as much as I have, just as much as anybody has. It is governed by exactly the same laws.

If we were standing somewhere out in space and saw this planet moving as if it was in a devil of a hurry to get along with its journey, we'd say it had free will and knew where it was going. Of course, we'd say it, because we don't know any better, and somebody standing out somewhere and watching all the automobiles come into New York in the morning and go out at night would say the drivers have free will, too. They have neither freedom nor will, or they wouldn't do it. (Laughter.)

But has the fly free will? My friend says so. He talks about some of these animals that after long trial and error, bumping up against something, will find food. They don't all find it. Some of them die. And those who do find the way are preserved.

Let's see about an animal. Let's take a little animal, the plant louse. I use that for two reasons, first because I know something about

the investigation and secondly, I want to get something as close to man as I can. They catch these little fellows in a test tube, and they let a little ray of light shine on one end of the tube, and what happens? They immediately all start for that end of the tube. Why? Free will? They want to get where they can look out? Oh, no, nothing doing. They turn the tube a little, and they all run over each other to get to the other end of the tube because there is light there at that end. You see? The bugs (I don't mean humans, I mean the other bugs) hang around the electric light on a hot summer evening. What do they come there for? Of their own free will, to get scorched? Oh, no. They come there because of the effect of light upon their organism. It is a simple tropism, like hitting someone with a hammer. They are compelled to go there. They are brought there by the action of the light upon their structure; nothing else.

Does it help this situation any to say that everything that is self-perpetuating has a soul or is one with God, or two with God or whatever it might be? You must include, then, every animal—more than that, every plant is made the same way. Might the plant not say, "I am green; I am one with God. I am a creator. I take 'inorganic' matter and make 'organic' matter out of it. I have a soul." These silly scientists who are sillier than any religionists ever were, say, "I am a machine, but I am one with God." The plant can reach down into the earth and the rocks and send a root out into the moist ground and bring it

all together and make a plant. And some of us higher organisms can eat the plant so that we can write poetry.

All of these plants and all of these animals have the same basis of life as man. My friend says that a human being can grow, and a machine can't grow. A mechanistic organism can grow. Every plant grows; all animal life grows and decays. It is born and it dies. It lives its time and goes on its way. Now, what is the difference? If a man is made differently from a machine, then a tree is. A tree is a collection of cells, always growing, always dying. Man is the same; other animals are the same. Probably the cell is the furthest down you can get to the foundation of life, so far. Life probably comes from protoplasm. But that isn't saying much. It was once supposed to be saying a great deal. It is only a statement of the substance that it comes from. There is no mystery in it. Take any one of us and have us analyzed by the chemist. If you want it done, why you can have it done. You can find out everything that is in you excepting your oneness with God. You will have to go to the theologian for that.

When it comes to man you can find out every single thing that is in him. There isn't a single thing in him you can't buy at the drug store for about ninety-five cents, and a good many of them aren't worth it at that! (Laughter.) Why is it, pray tell me, that all the investigation, with closed eyes, that theologians have always given these problems, with all the thought and all the speculation, down through

all the ages they have never found a single thing that isn't mechanical, never found a single thing in man, or the manifestation of a single thing, that isn't a mechanism? And when we get to man and understand him, we understand what the mechanism is. It is man's body.

Of course, man is a little more complex organism than an amoeba, which has one cell. But there isn't so much difference at that. A man is a combination of cells like everything else. A man has more cells. An amoeba has one cell. Man is a little more complex than the early organism. We talk about the man who writes a poem. Why, they didn't begin by writing poems. Man began even lower than that! (Laughter.) He began by picking up worms and bugs and eating them—and enjoyed it. He began way down with a different form, different organs, came through almost every form, even the simplest, up to his present estate. I don't know what that is. People that have any estate always brag about it. That means that he has got more nerves to bother him, and there are more ways that he can die. But he began simpler than he is today. Not even as a writer of poetry, an organism that reached around to avoid pain and seek pleasure, looked for the sun just like the plant louse, looked for light the same as the potato, having some emotions which are in a rude way life-sustaining probably, the emotion for food and the emotion to keep his fool species going along.

His body isn't a perfect thing in any way.

It is full of mal-adjustments. No two bodies are equally good, but no two are perfect. Even his eyes are a botched job. His nervous system is a bad job. His whole internal organism is bad. At that, it is better than most machines, perhaps than any. But why? Why is it bad? I will tell you why. Let me give you a few simple illustrations. Men get varicose veins in their legs. Why? Because the small veins in the legs won't hold up all the blood of the body and they were made as they are when he walked on all fours. The veins didn't need to hold up any such weight of blood. His whole apparatus goes back to a primitive time and more simple arrangement. He used what he could use of the old while he was getting the new. How long has he been doing this? Nobody knows. As a human being he has been here at least a half million years. As a descendant of earlier organisms he has been here since the earth was cool enough for life to exist. He is constantly changing.

Is there anybody who can tell us where the first form of life began, or how it began? If he can, he ought to. It would be very interesting. Can you tell when or where or how? Nobody knows. They don't know when or where or how, but they do know this. We read it in the rocks, we read it in man; we read it in all animal life that this first was an inorganic world floating in space, made for nobody so far as we can see, unless someone was playing football with it, and it was hardly large enough for that, or interesting

enough. It circulated in space for millions of ages without any form of what we call life, and gradually, as it cooled, and probably through heat and moisture, vegetable life appeared. Vegetable life had the field alone for ages. Vegetable life created inorganic matter into organic matter. How? Because it had a soul? Nobody knows anything about the soul of a cabbage, although they think they know about the soul of a cabbagehead! I can't see any difference. Nobody knows a thing about it. Animals came, and they lived upon vegetable life, more primitive forms first. Man is the last and perhaps the most complex of all. We know enough about the past, we know enough about evolution, we know enough about man himself, we know enough about the mechanical constructions of things to be warranted in believing that when we have all the facts and are wise enough we will find that all is of one pattern. (Applause.)



## NEGATIVE REFUTATION

*Dr. Will Durant*

CHAIRMAN WATSON: The amenities are all over, the compliments are all passed, and the fur will now begin to fly. We will now have fifteen minutes refutation by Dr. Will Durant. (Applause.)

DR. WILL DURANT: I don't like the rather harsh things that my dear enemy said about me in the beginning of his address. They hurt me a little (because I am not entirely a machine), but I shall try to forget them. I didn't know that I had said nothing, and if that is true, it is utterly absurd for me to try again. I resent, too, the effort to drag religion into the debate and to compel me to defend things which are not at issue! (Applause.) I said nothing about religion except perhaps in that little poetical flight at the end, which I presume even a machine would understand was meant as poetry. And I thought that I had put as much science into that first talk as could be digested in forty minutes.

I am astounded to learn also, that my task tonight is not merely to show that man is not a machine, but to show various other things. The gentleman expects me tonight to solve problems that no philosopher has ever been able to solve, and he seems to assume that unless I can answer to his satisfaction and to everybody's satisfaction the old problems as

to what is life, what is man, and what is mind, I have not done my task. That is a ridiculous demand upon me. I came here tonight to try to show the absurdity of a certain theory. I submit that that is absolutely all that I am required to do. I refuse to give Mr. Darrow more than he deserves for one evening! (Applause.) Some other time.

If a man comes to me and says that two times three are nine, when I prove to him that he is wrong, it has nothing to do at all with the question as to whether I can say what two times three are. I may be able to demonstrate that his answer is incorrect. If I can show that the mechanical theory of life runs counter to evident facts, it is absolutely all I have to do tonight. Probably I could do more, but not just now.

Mr. Darrow tells me that no fact has been discovered that proves anything except that all life is mechanical. Well, I can only believe that he had a good nap while I was talking. I thought I had loaded the atmosphere down with facts about locomotion and digestion and growth and almost everything conceivable. I observed the care with which he avoided touching upon the facts that I had enumerated! (Applause.)

I don't remember his attempting to meet any one of the points made, but I have hopes that an attempt will be made before the night is over. He says with the audacity of a young student that we have never found a single thing that isn't a mechanism. Well, of course,

that is the begging of a question. We are discussing that question, we are not assuming it. He tells us there is not a single thing in you that cannot be bought in a drug store. I don't think you could buy the raw materials that would make a Clarence Darrow unless you had some life potency to work upon those materials and build them up! (Applause.)

He tells me that a machine is something that transforms energy—yes, when you guide it, when you feed it, when a living being helps it, and even in that famous furnace of his that he talked about, the coal is put in by a human hand, and the coal itself was a living thing, and the wood that you put in is a living thing! (Applause.)

This childish comparison of the body to a machine is useful in textbooks of physiology where we have to introduce the young student to the superficial phenomena of a tremendously complicated situation. But to presume that that is anything more than a little helpful analogy is a youthful presumption. Would this circulatory mechanism, this respiratory mechanism, work without the vitality in the heart, and in the living tissues of that body? Take that vitality away, take that heart away, and then put all your oxygen in and all your hydrogen in, and all the materials that you wish. What happens to them? Are they built up into life? Not at all. The comparison with a machine is worthless! (Applause.) Of course, Mr. Darrow never thought of that! (Laughter.)

He tells me, with that same blithe assumption of the question under discussion: "A mechanistic organism can grow." What an absurdity! The whole question in discussion is whether it is possible for a mechanism to be an organism or for an organism to be a mechanism. That is the thing we are discussing. For a man to assume that there is anything, any such thing in the world as a mechanistic organism, when that is the thing he has to prove, is delightful; it is even more close to poetry than any effort of mine! (Laughter.)

I was interested to learn about this gentleman that Mr. Darrow spoke of who lost some blood and who was given salt water into his veins. Mr. Darrow gave himself away when he said that after a while the man began to make blood for himself again. That is a queer thing to do, isn't it? The living organism does it through that living power in it, which is there, which lies under your nose, though you may not be able to give a chemical analysis of it. That is the trouble, you see, with Mr. Darrow. He thinks that because I can't give him a physical and chemical explanation of what this living vitality in me is, that therefore it doesn't exist, or therefore it is mechanical. If we can't explain it in mechanical terms, therefore, it is mechanical. Do you see the argument? (Applause.)

Why, I submit that the merest sensation going on in these living organisms here tonight is something that Mr. Darrow has not begun to reduce to a mechanical process. A machine doesn't repair itself that way, never could pos-

sibly begin to create blood in itself. Always that power of life is there in a living thing, which distinguishes it from mechanisms.

I sometimes suspect that all the mechanisms in the world, not only those that we make, but all the things that we think are mechanical, are simply the superficial relic of what once was life. I feel that when life passes away, or takes some other form, it leaves these excretions, so to speak, of mechanism behind, as some day this exuberant vitality of mine will no doubt be gone from the bones that hold it together now, and in my grave there will be mechanical processes—perhaps. So it may be that all the mechanisms that we see are the left-behind remnants of life that has passed on. That is just a suggestion that would have to be considered at great length to amount to anything.

Now, when I speak of this power of life, it is in that sense that I consider myself free. I do not say I have free will. I submit that I never used that phrase, except to ridicule it in my first address. I quite recognize that my will is the sum total of my desires, my aptitude, my dispositions, my tendencies. I recognize that I was subjected to thousands of molding forces even before I was born. But there is that thing, that quota, that iota, that particle of life that is subjected to these things. It is a neglected part of the determining conditions. That is the whole point. It is not merely a passive wax upon which experience writes. Surely Dr. Watson will bear me out when I say that this view of mind is simply a passive

thing upon which sensations work their will unresisted, that it is very antiquated psychology.

We even select what our sensations will be. There are thousands of audible things which you do not hear at this moment because it is not to your purpose to hear them. You select what you shall hear, what you shall see (within limits, of course). The mind is a selective and reacting thing. It is a molding thing.

Mr. Darrow, of course, is still living in the age of Herbert Spencer: his philosophy and science have not, perhaps, come down from that mid-Victorian age. He would think as Spencer did of the mind as simply a readjustment to external things, of education as an adjustment of the individual to the environment.

We understand today that the mind is not only adjusted to its environment, but it adjusts the environment to itself. It molds and creates. We understand that education does not or should not merely fit the individual for his environment. It should fit him to fit his environment to his own will and purposes and desires. Only in a non-mechanical philosophy could you conceive such an education. I am determined, I am compelled, I am molded, but there is something in me that struggles, that has some inexplicable but visible and actual energy. Now that must be considered. It is the most immediately known thing in the world, this vital force that exists in our human behavior, this consciousness.

I am told that there is no consciousness.



In one minute can I show you that there is? Consciousness is the theater of imagined responses, enabling us to select which of the imagined responses we perceive will be the most successful. Here is a situation, a problem for me to face. A purely mechanical organism would react at once; why should it hesitate? I say to myself, "Now, I could do this." I imagine what would happen if I did this. I see in imagination that that result would be unpleasant. I do not do that. I imagine another possibility. I rehearse, so to speak, various possible responses. That is the function, the efficacy, the meaning of consciousness. And then I choose; and in the degree in which I have knowledge of my many possible responses, in the degree in which my knowledge enables me to perceive and understand that variety of possible reactions, that which in my foresight seems most beneficial to me. I act then, for all the world, unlike a machine. That is the meaning of consciousness in this world.



## AFFIRMATIVE REFUTATION

*Clarence Darrow*

CHAIRMAN WATSON: Mr. Darrow now has twenty minutes in refutation. (Applause.)

MR. CLARENCE DARROW: I am really sorry if I said anything that was at all rough to my friend. Perhaps I did. There are few people, few men whom I have ever known for whom I have a higher regard and a greater appreciation. I'd rather have written his book on philosophy than to have done anything or everything that I ever did. (Applause.) And I only wish he was as philosophical in his debate as he is in his book! (Laughter.)

Now, let me see. I told you that you could buy everything in a man in a drug store for about ninety cents if you want to fool away your money. You can't. We don't know how to do that, perhaps never will know. But we do know that every man acts as a mechanism, or I think we know it. He says my illustration of the blood and the action of the heart and all that was primary stuff. I wish it were primary stuff. But he says you couldn't make all this act without the heart. Oh, yes, you can. Life existed for ages without anything that resembles a heart. Why, it is a growth, it comes from circumstances that surround it. It wasn't here forever. It grew up as the machine changed and as it may change. Perhaps it will grow again in some other way.

We used to say that nobody's brain could be injured without death following. We know better now. We know the brain is about the mushiest part of the human organism. You can take away the most of it and get along all right. (Laughter.) I don't mean all right, but just as well as you do now. In some of the animals it has been taken out entirely, and they got along all right. And of course from all we know of man we know he does just the same thing without a brain as he does with it. There isn't any difference.

There isn't a thing in man that I can think of at the moment that hasn't existed in various forms or that he hasn't lived without, and if he lives long enough in this world of ours, this man that we see today will probably be entirely changed, whether for better or worse we don't know. I imagine it couldn't be for worse, so it will have to be better.

The strange thing is that in a religious sort of way we assume that everything was made as it is today. My friend says I ought not to have brought in religion. I again say I didn't bring it in. He brought it in. But why not bring it in? It is there. Let me say this: The conception that has been taken tonight, which is generally taken, is a religious conception. (Applause.) It is not a scientific conception, and it has no relation to science. (Applause.)

I want to repeat again that I can't explain the mystery of life, but I think I know enough about it to believe that when it is all told, human life and animal life and plant life will be just like everything else that exists, and all

come within the same great general realm of law, that no miracle was wrought when these things made a human being. Man wasn't made out of the earth in the image of God, with a bone furnished to make a wife. Nothing of that. He is a matter of evolution from the first forms, and where those come from I don't know, but I do believe that it all works in a mechanistic way. (Applause.)

Suppose one of you is afflicted with disease and you go to a wise doctor. What does he do? Ask you about your soul? He does if you go to a Christian Scientist, but I am speaking of a wise doctor. He doesn't say a word about it except perhaps tell you to be cheerful so your food will digest. He examines you. He tries to find the cause of your malady. If he finds it, what is it? In every single instance it is a mechanistic cause, every one, and no doctor ever finds a cause until he finds a mechanistic cause. (Applause.) Until that time he goes at your case blindly, giving you such medicines as he happens to stumble on, and sends you the bill, but he knows nothing about the disease, nothing whatever. Every solution that is made of man's conduct, every single solution that is made is a mechanistic solution, and all that we can correlate in the conduct of a man confirms the machine which converts one form of power into another form of power.

Let's see how serious it would be if I am not right in this. My friend says I have no business to ask him the question where life came from. That is a lawyer's answer. (Laugh-

ter.) You know lawyers. I have the affirmative of this case. It is enough for him to stand off and parry my blows, if any, and not let me land on him, and keep my mouth shut as to everything else. That is enough. If he could do that he'd do well. But one way to prove that my theory is wrong would be to tell us where life did come from, wouldn't it? Some of you shake your heads. That is because you are religionists. (Laughter.) You don't want to contemplate giving up your soul. You can't get rid of the idea. Your own egotism makes you believe that you are so great that some Supreme Being designated you for immortality, and you are going to live forever! (Applause.)

Now, if one did not believe in the mechanistic theory of life, he probably would believe in some other thing. Why not tell us? Why haven't we heard one single word? Why do we say, why do we hear only the statement that you don't account for life? You don't account for this, you don't account for that, and still as to anything we believe we are silent excepting to recite poetry, which isn't very good poetry at that! (Laughter.)

I think that the theory of mechanism is growing very rapidly in the world. There are only two theories that I can conceive. There may be a hundred others that no man knows about, but there are only two theories that can be conceived. Now my friend talks about vitalism. What in the dickens does he mean by vitalism? Change the word spirit to vital, and

it means nothing. There are only two theories that way back in the infinite past there happened to be matter in this universe. Now, don't any of you get too much proud flesh, as Rev. Field called it. Your soul was made by people who thought the earth was flat and the stars were right close by and about as big around as a dime. Your ideas came from that, and by people who thought that the stars were placed in the heavens for human beings to look at, nothing else. A human being was so great and so wonderful and so magnificent that everything on the earth was given into his keeping, and he alone in all the universe was endowed with an immortal soul. Now, if you want to believe it, and can, why do it. You will never get over it unless you take something for it! (Laughter.)

We know now that the earth is one of the most insignificant spots of mud in the whole untraversed universe; that there are an infinite number of suns and planets and stars that are as much bigger than the earth as we are bigger than a fly speck. We know it, and yet, we hang on to the idea that somehow or other we are going to be cheated unless we live forever!

I am not here to give you any consolation. I am not going to give you any consolation excepting this, that in a world of egotistic people who have nothing to brag about excepting their ignorance, a frame that is capable of some joy but of much pain, a life of vicissitudes whose end is death and pain, and whose constant ac-

companiment is pain, in a world of that sort it ought to be some consolation to know that you haven't got to live forever.

Why am I interested in this subject, and why should you be interested? Because, as my friend puts it, man is an inquiring animal. Can any being something like man be an inquiring animal? Oh, yes. All the animals are, and I suspect in the same sense all the plants are. You see them poking their noses into the most unheard of places, and for no reason on earth excepting curiosity as far as I can see. We can't correctly translate the actions of plants and animals. The only thing I ever saw that to my limited knowledge seemed to have free will was an electric pump I had once on a summer vacation. Every time we wanted it to go, it stopped. I couldn't think of anything except free will, and all of a sudden when we knew nothing about it, it started again? (Laughter.) Now, I suspect that there was a reason for it. I suspect there was just as much reason for it as there is for the most intelligent being, if we could find such a person, and such an action.

I think I know this—that not a thought can pass through your minds without wasting tissue. Of course, people don't waste much tissue! (Laughter) I know that. Not an emotion can move you without its cost in tissue. You can weigh the waste in tissue caused by the life and the thought of a man confined in a glass cage. You can weigh it just as you can weigh what is spent and used by a steam engine in producing steam. The law of conservation and

correlation of forces which so far seems to be supreme means that no force is lost, but that it all passes into something else, and that no force whether physical or what this moronistic world calls intellectual (moronistic was the word I used), can come without being fed, without the power and the force that it takes from your body in some form.

As far as we know and can see and understand, this is a monistic universe. It is all of one piece. The farthest star that our telescope sees is made from exactly the same material as the earth. One law rules, and it rules the living and the dead. There are no living, and there are no dead, because there is action in the dead as well as the living, simply of a different form as the decay of the body and sending forth of the gases is all one thing, and it is idle to try to separate it. (Applause.)



## NEGATIVE REBUTTAL

*Dr. Will Durant*

CHAIRMAN WATSON: Dr. Will Durant will now close the debate with a five minute rebuttal.

DR. WILL DURANT: I doubt if the first speaker in a debate has any right to this third appearance. I have protested against it, but they have asked me to obey the Queensbury Rules, and so I should like to say (now that Mr. Darrow has no chance of answering me) that all his talk about the immortality or non-immortality of the soul is irrelevant to this debate, and I put it aside. (Applause.)

He tells me that mine is a religious conception, and that it is not a scientific conception. Words do not frighten me. What he really means, though, if he understood himself and the terms that he uses, is that my conception is not a physical conception. He supposes that the only science is physics. I wonder has he studied biology and seen the vitality of it? My conception is a biological conception, and not a physical conception, and the assumption that a conception is not scientific unless it is physical is the assumption that it is supposed to be proved tonight, and not to be taken for granted continually. Life, not a machine, is the clue to understanding the world. That

is the conception that I have given. If that is of any use to religion, very well. It is welcome to it. Anybody is welcome to that because I have simply arrived at it in an honest search for the truth, and I don't care where it leads.

He tells me that all medical causes are mechanistic. Nonsense. Has he ever heard of the germ theory of medicine? Why, the whole science of medicine today is built on Pasteur's conception that practically all diseases are caused by live organisms! (Applause.)

Let us be honest and clear-headed with ourselves. Do we treat ourselves as machines? Do we treat our friends as machines. Does Clarence Darrow treat people as machines, or as living, growing, groping, feeling personalities? I leave his life to answer that.

He tells me that life is stupid, that it is often suicidal. The insect comes toward the light. Yes, life is not infallible. It is full of errors, but that is just the point. If it is full of trials, it struggles around and through these stupidities; it dies. Even the lowest behavior is not as Mr. Darrow thinks. Let him read the latest report on the investigation of the behavior of the protozoa.

Yes, life is full of mal-adjustments, of sufferings, but what I see in it is that it ran a tremendous gamut from the amoeba to Clarence Darrow, and I do not believe that we can understand that effortful struggle of life to reach from that lowly condition to this culminating condition unless you see in it something that

could not possibly be explained in mechanical terms. And when I say vital I do not use a mystical term. Let me remind you that we are more directly aware of vitality than of any other fact in the world. If that is not a fact, nothing is. And yet, we die, which I remind you again a machine cannot do. But sometimes before we die we reproduce, and through reproduction life cheats death and passes on. We individuals are the cells of the body of life; we drop off like the epidermal cells of our hands, but the living power goes on, reaching ever higher.

Mr. Darrow wants my theory. My theory is not vitalism. I never used the word tonight, but he has chosen to put that theory into my mouth. Vitalism is the theory of Bergson, that in addition to matter and absolutely distinct from it is this thing called life which he believes can exist without matter. I disagree with all those propositions. I do not say that life exists in matter and distinct from it. I say matter is alive. I say that life and matter are one in inextricable unity, and matter is a word that describes only one side of that complicated and throbbing fact. (Applause.) I suspect that if we could get into the inside of the matter, we should have to use in order to understand it that concept of the organism and vitality which I have suggested to you. That is all,

